Information Needs of National Health Insurance:

A Discussion of Principles, Issues, and Legislative Recommendations

Report of the
National Committee on
Vital and Health Statistics

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January 22, 1980

The Honorable Patricia Roberts Harris
Secretary, Department of Health,
Education, and Welfare
Washington, D. C. 20201

Dear Secretary Harris:

On behalf of the National Committee on Vital and Health Statistics (NCVHS),
I am pleased to transmit the report entitled "Information Needs of National
Health Insurance: A Discussion of Principles, Issues, and Legislative
Recommendations." This is one of several topics of study identified in the
Committee's mandate under Section 306(k) of the Public Health Service Act.

In previous reports, Panels of the NCVHS have considered various aspects of
a crucial topic: the development of uniform minimum data sets to improve
health informational systems in the United States. Thus far, reports
concerned with this matter have been prepared in the areas of hospital
care, ambulatory care, health manpower and health facilities, and long-term
care. In the present report, the Committee turns its attention to
consideration of the central concepts and information needs which will be
required by any health plan of National scope. In this regard, the
Committee is committed to the elimination of unnecessary or duplicative
collection of health data while achieving a common minimal level of
uniformly defined data to permit necessary sharing and comparison of
resultant health and health services information while observing strict
guarantees of confidentiality.

The Committee wishes to emphasize its strong endorsement of the
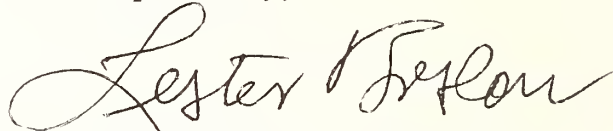recommendations contained in this report, and in particular the following
principles:

- The information system must have the capability to a) count the
  number of persons enrolled, the number served, and the services
  used, and b) link these measures to available resources, NHI
  revenues and expenditures, and health status.

- If the entire population is not covered by NHI, then the informa-
  tion system must have the capability to estimate periodically the
  size and demographic characteristics of both covered and uncovered
  groups, and their utilization of both covered and non-covered
  services.

- Mechanisms must be built into the information system to assure
  accuracy, timely data collection and processing, and useful
  applications of data to management, policy and evaluation
  activities.

The National Committee on Vital and Health Statistics which has unanimously endorsed this report recommends thorough review and appropriate implementation of these recommendations throughout the Department of Health, Education, and Welfare as well as its widespread dissemination.

It is to be recognized that the Committee's recommendations have been developed in consideration of the needs of both the public and private sectors. Certain recommendations, therefore, may not be applicable within the sphere of Federal programs, and certain recommendations may require adaptation to assure applicability within the Federal sphere. Recipients of the report should be aware that it does not necessarily represent Departmental policy.

The National Committee on Vital and Health Statistics is indebted to the members of the Panel for their hard work, advice and guidance as it considers the provision of health care services for all. Central to this effort has been the contribution of the Panel's Chairman, Dr. Paul M. Densen. To Ms. Maura Bluestone, NCHS, staff to the Panel, whose contributions made this report possible, the members of the Panel, this Committee, and I are all most grateful.

Respectfully,

Lester Breslow, M.D., M.P.H.
Chairman

Enclosure

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INFORMATION NEEDS OF NATIONAL HEALTH INSURANCE:
A DISCUSSION OF PRINCIPLES, ISSUES, AND LEGISLATIVE RECOMMENDATIONS

Section I. Introduction

The continuing debate over the development of national health insurance has generated a variety of statements of purpose. The common goal of these proposals is to ensure equitable access to health care services of acceptable quality at a reasonable cost. This goal embodies several concepts, each of which is approached differently in the various national health insurance proposals under consideration:

1. Financial, geographic, and social equity; that is, elimination of barriers arising from inability to pay; nonavailability of adequate resources; and racial, cultural, educational, age, and sex bias,
2. Assurance that quality of care is acceptable to both providers and recipients of service,
3. Sound resource allocation and effective cost containment measures,
4. Effectiveness and efficiency in the organization and provision of health services required for prevention, diagnosis, treatment, rehabilitation, and health maintenance,
5. Protection against catastrophic personal health expenditures,
6. Improvement of health status.

The process of developing policies and designing a national health insurance program to accomplish this goal draws upon the experience of existing health care services and financial arrangements. For example, deliberations over financing, payment, cost containment measures, cost projections, and incentive structures reflect analyses from both private and public programs including Medicare, Medicaid, professional standards review organizations, and health planning activities. One significant lesson to be learned from this collective experience is that program management and public accountability suffer when insufficient

thought and planning are devoted to data and information needs.

The form and content of a national health insurance program vary considerably from one proposal to the next. Regardless of the specific form of the national health insurance program eventually legislated (i.e., whether it is centralized or decentralized, comprehensive or limited in scope, public or private), information will be needed to address fundamental questions raised by program management, Congress, and the public. Although detailed features of an information system differ among the various proposed plans, a basic set of concepts pertains regardless of the specific form or content of the national health insurance program eventually adopted. These concepts are fundamental to effective management and public accountability, and require special attention in anticipating the information needs of the national health insurance program.

Effective management requires data for (a) description of the population served; (b) projection of revenues, use, and expenditures, and comparison of those forecasts to actual experience; and (c) provider identification and monitoring. Public accountability requires conversion of data into information about the conduct and rationale of legislative and operational policies, and the achievement of stated goals. Examples abound of the data problems that handicap these functions in many existing programs. Common to these problems is a history of:

1. Failure to understand that adequate data for operations and evaluation are essential for program efficiency and cost-effectiveness,
2. Insufficient lead time for planning and development of information systems,
3. Unclear designation of specific authority and

responsibility for development and maintenance of those systems,

4. Allocation of insufficient resources to support the systems,
5. Failure to identify and coordinate the data needs of those constituencies whose use of the data would justify the information systems and generate a continuing demand for commitment of adequate resources,
6. Inadequate allocation of resources for analysis and application of data,
7. Lack of quality controls to assure data accuracy,
8. Failure to relate data to key issues in program management and planning and evaluation.

In an effort to avoid or minimize similar problems in the national health insurance program, a Technical Consultant Panel of the U.S. National Committee on Vital and Health Statistics has developed a framework for consideration of information needs. The following sections contain Panel suggestions for legislative language to ensure a commitment to an effective information system, and present a conceptual framework for development of that information system. Through endorsement and distribution of this paper by the U.S. National Committee on Vital and Health Statistics, it is anticipated that consideration of essential data and information requirements will become an integral part of the process of national health insurance legislative development.

Section II. Legislative Recommendation

Information needs must be specifically addressed in national health insurance (NHI) legislation. The structure and content of the system that will generate this information should embody two essential features. First, the information should be *population based*; that is, resources, services, and funds associated with NHI should be expressed in terms of persons enrolled and persons using services. Second, the structure and administrative organization of data activities should *promote accuracy, effectiveness, and efficiency* in the collection, processing, and analysis of data. These features require adherence to the 10 principles listed in the following suggested legislative language:

A. To ensure effective and efficient administration of NHI, promote public accountability, and provide a basis for policy formulation, the (NHI Administrative Authority) shall establish an information system that adheres to the following 10 principles:

 1. The information system must have the capability to (a) count the number of persons enrolled, the number served, and the services used; and (b) link these measures to available resources, NHI revenues and expenditures, and health status.
 2. If the entire population is not covered by NHI, then the information system must have the capability for estimating the size and demographic characteristics of both covered and noncovered groups periodically, as well as the utilization of both covered and noncovered services.
 3. The privacy and confidentiality of data on individuals, both providers and consumers, must be safeguarded while providing access by responsible users to information required for program management, health planning, monitoring, research, and evaluation.
 4. Authority and responsibility for all data activities should be clearly designated at Federal, State, and local levels, and between the public and private sectors.

 5. Reporting requirements should minimize the burden imposed on data suppliers and processors while ensuring sufficient amounts and types of data to serve NHI information needs.
 6. Data items and sources needed for planning, evaluation, and research as well as management should be clearly defined, taking into consideration existing data systems.
 7. Uniform minimum data sets, classification schemes, and glossaries should be promulgated to ensure comparability and completeness of reporting.
 8. Reporting mechanisms should accommodate multiple uses and minimize duplicate reporting of data.
 9. Mechanisms must be incorporated into the information system to ensure accuracy, timely data collection and processing, and useful applications of data to management, policy, and evaluation activities.
 10. Emphasis should be placed on meeting the information needs of providers and consumers of care as well as NHI managers, fiscal intermediaries, and policy analysts.

B. The information system shall provide necessary data, through appropriate combinations of direct acquisition and the use of secondary sources, for:

 1. Management functions including (a) enrollee and provider eligibility determination, (b) budget formulation, (c) reimbursement, and (d) monitoring of use and quality of services.
 2. Evaluation and policy analysis studies including effects on total and per capita expenditures, access to services, quality of care, and health status of (a) alternative methods of service delivery, (b) cost containment measures, and (c) quality assurance efforts.

C. The (NHI Administrative Authority) shall designate an office/offices responsible for management information functions and for evaluation and policy analysis studies, as outlined in item B.

D. No later than a specified date of each year, the (NHI Administrative Authority) shall report to Congress on:

1. The operation of the NHI program including (a) trends in costs, revenues, and expenditures; (b) volumes of services provided; and (c) characteristics of the enrolled population.
2. The impact of NHI on (a) containment of health care costs; (b) use of services; (c) reduction of inequities in use among population groups; (d) financial burden of health care on families, individuals, and employers; and (e) health status of the population, to the extent practical.
3. Recommendations issued by the (Commission on NHI Information Needs) (see item E).
4. Research, experiments, and demonstrations conducted under NHI, available results of those projects, and associated policy implications.

E. There is to be established a (Commission on NHI Information Needs) which shall be responsible, on a continuing basis, for

1. Recommendation of data policies and priorities for NHI,
2. Review of the extent to which the information system is adhering to principles established in item A,
3. Oversight of system coordination,
4. Review of the adequacy and appropriateness of uses made of data within NHI in relation to the cost of obtaining and processing those data.

The (Commission) shall be composed of _____ members appointed by the _____ from among major data users and persons with expertise and data acquisition, processing, and analysis. The (Commission) shall meet no fewer than _____ times per year, and shall report annually to the (NHI Administrative Authority) on the status of the NHI information system.

F. Funds to support management information functions shall be derived from the NHI operating budget as part of administrative expenses. Additional funds to support policy analysis and evaluation studies shall be provided not to exceed _____ .

(Note: The intent of item F is twofold: first, to ensure continued, adequate funding of the information system; and second, to support management information functions with NHI premium dollars, and policy/evaluation functions with Federal appropriations. Determination of an appropriate funding level/formula for the latter appropriations should consider the following:

1. Some NHI information needs can be adequately served by existing data systems. Funding of the NHI information system will vary depending on whether the funds for these existing systems are allocated to the NHI budget or remain within the budgets of current agency sponsors.
2. The funding level/formula for policy and evaluation activities should be expressed as a percentage of a component of NHI expenses or benefits (e.g., one-half percent of administrative expenses) to ensure that this funding bears an identifiable relationship to the NHI plan while containing the overall cost of the information system.
3. Funding levels for policy and evaluation studies in existing programs should be examined to identify

(a) Underlying assumptions,
(b) Adequacy for supporting necessary data collection, processing, and analysis,
(c) Procedures for reassessing funding needs periodically,
(d) Factors for which significant cost changes have occurred or are anticipated, for example, changes in the expense of conducting data collection,
(e) Experience with the relative cost-effectiveness of alternative information system mechanisms including coordination among systems to reduce duplicative activity.

Section III. Overview of NHI Information Needs Related to Program Management

Two basic kinds of information will be generated to serve NHI needs. The first is information derived from operation of the NHI plan. This material, intended primarily to serve management functions, should be useful in addressing many policy and evaluation issues as well. The second is information needed to address questions of public accountability not adequately served by program data. (See section IV.)

Figure 1 provides a conceptual framework for development of the information system. The first step (A in figure 1) in building such a system involves identification of management functions. The basic concern of management is that the program delivers efficiently, on a daily basis, the coverage mandated by law. Major functional areas include (a) enrollee eligibility determination and "marketing," (b) provider eligibility determination, (c) financial management, and (d) program oversight.

Each function, in turn, generates a set of questions (B in figure 1). Enrollee eligibility, for example, poses the question "Is an enrollee eligible for full or partial coverage of a particular service?" Any constraints or variable features built into NHI coverage, for example, copayments or optional benefits, will require eligibility determination for validation of benefit coverage. The related "marketing" function prompts the question "How many of those who are entitled to coverage are enrolled in NHI?" Whether coverage is universal or restricted to population groups such as mothers and children, NHI management must be apprised of the extent to which the program has enrolled those whom it intends to cover. Similarly, if NHI coverage is restricted to a population group, administration must determine disenrollment when and if individuals exit from the group, (e.g., children because of age-restricted eligibility). An NHI arrangement under which private insurers can be assigned various functions, such as underwriting or enrollment, will foster management interest in knowing what proportion of eligibles have been "captured" by each organization.

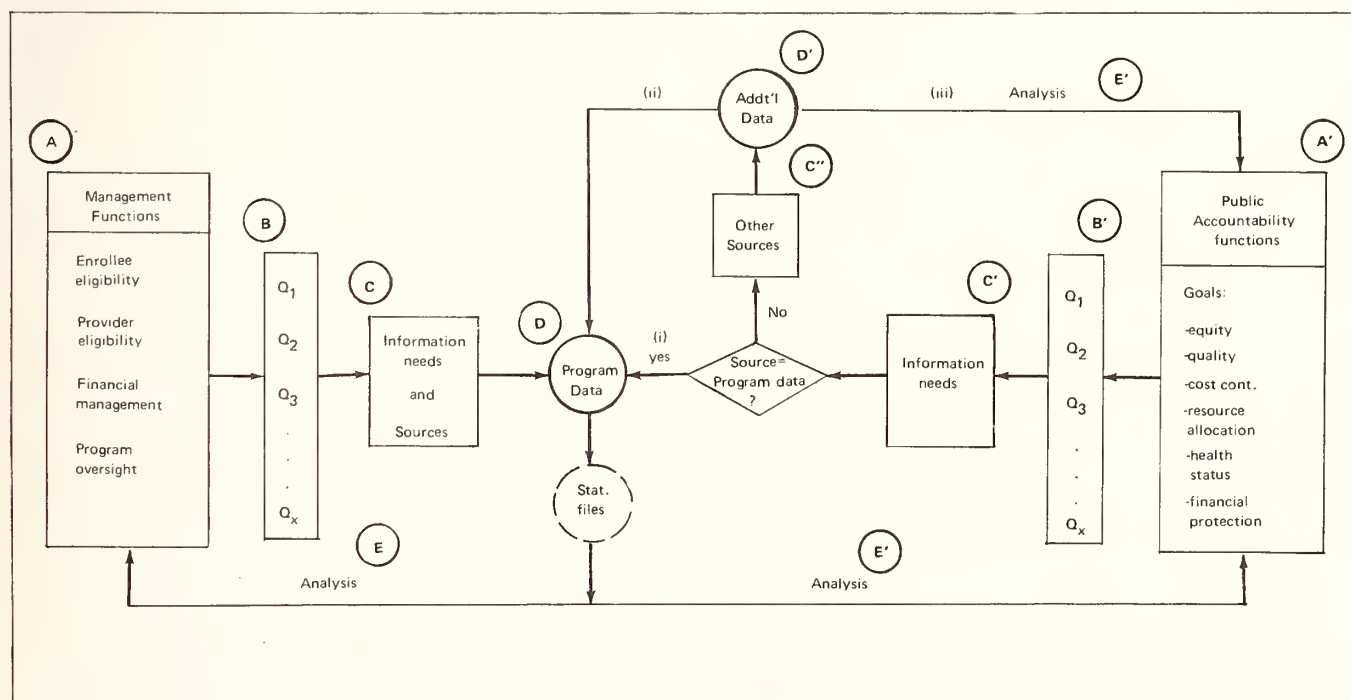In determining how to answer these questions,

Figure 1. Conceptual framework for developing and information system for National Health Insurance

information needs and sources will be identified (C in figure 1), and data content, that is, items of information will be specified (D in figure 1). Enrollee eligibility questions, for example, point to the need for an enrollment file that lists the enrollees and their location. At a minimum, this information will generate, for each enrollee, program data including (a) a unique individual identification, (b) demographic characteristics, (c) certain socioeconomic traits if relevant to coverage (e.g., family income if coverage includes income-adjusted copayment provisions), and (d) relevant management information (e.g., payer affiliation if NHI enrollment is through intermediaries and/or insurance companies). If NHI evolves as a decentralized program, for example, if it is administered through private insurers and/or subnational authorities, national guidelines for assigning enrollee identifiers will ensure the unique identification of each beneficiary continually throughout the NHI system. Marketing questions can be addressed by contrasting counts from this enrollment file to population figures from a source such as the U.S. Bureau of the Census. This procedure is used, for example, in estimating the extent to which Medicare encompasses the population 65 years of age and over.

The systematic flow from functional responsibilities to associated questions to information needs and specific data leads to the most important part of the system—the analytical process (E in figure 1) whereby accumulated information is applied to support program operations. Examination of each management function thus serves to identify the core of an NHI information system, that is, program data and its analytical applications.

As for enrollees, the process of provider eligibility determination prompts the query, "Is a given provider eligible to receive payment for services provided under NHI coverage?" Furthermore, "Is payment made on a fee-for-service, capitation, or other basis? Is payment made directly to the provider or through an organizational affiliation such as a group practice or a hospital?" Qualifications or variations on provider participation status point to the need for appropriate identifying information. This information could include, in addition to payment method, specifications of reimbursable services by provider type (e.g., only selected chiropractic procedures), and by provider certification (e.g., renal dialysis services only in certified facilities).

These eligibility considerations dictate the need for provider files that include, at a minimum, individual records identifying the provider and those characteristics related to eligibility requirements for NHI participation, such as type of practice or facility,

number of providers included under a group identification code, and so forth. Each provider's identity should be unique so that all activity within NHI can be identified. As with enrollee identification, if NHI evolves as a decentralized program, national guidelines for assignment of provider identifiers will be needed.

Financial management and program oversight are closely related functions with overlapping information needs. Financial concerns range from formulation and management of the operating budget, including processing of payments, to design and implementation of cost containment strategies. Program oversight encompasses not only the way in which program funds are expended but also the legitimacy and appropriateness of those expenditures.

A series of questions are generated by these functions. "What are the amounts and sources of actual and projected NHI revenues? Are these sources (e.g., rates of employer/employee contributions) adequate to meet current and projected needs? What are the actual and projected total program expenditures?—per capita expenditures?—expenditures for various types of services, for example, hospital care, physicians' visits, home care, and so forth? What are the administrative costs of operating NHI? Is the level of administrative expense reasonable, that is, are benefits—proportion of revenues expended on services for enrollees—maximized? If various underwriters or intermediaries are used, how do their administrative costs vary? How many of what types of services are purchased with program funds? What are the use and expenditure patterns in various delivery settings (e.g., group versus individual practices) and payment methods (e.g., fee-for-service versus capitation arrangements)? What are projected changes in these patterns and their implications for NHI program costs?"

These and related questions indicate the need for (a) cost reports from providers of service, insurance companies, and other fiscal agents; (b) utilization data accumulated from visit records, encounter forms, discharge abstracts, and/or claims for payment; (c) operating budgets from plan managers; and (d) enrollment data by which the sociodemographic and geographic characteristics of program beneficiaries can be obtained for projecting NHI revenues and expenditures.

Undoubtedly, the administrative imperatives illustrated by the preceding discussion will generate a management information system within NHI. Data about enrollees, patients, providers, intermediaries, services, revenues, costs, and expenditures will be collected in this system. These data will be valuable, however, only if converted into useful, appropriate applications. In addition to addressing management questions, these program data and their byproducts

(e.g., statistical files) can and should help answer the policy questions that continually will be asked of the NHI plan. Development of such a capability, however, is apt to be neglected in the effort to satisfy administrative needs. Unlike management information, it cannot be assumed that the data needs of policy analysis and evaluation will be accommodated unless specific attention is given to those needs at an early stage of plan design. Thus, the thrust of the remainder of this report is on the information needs associated with questions of public accountability.

Section IV. Overview of NHI Information Needs Related to Public Accountability

The basic concern of public accountability is to ensure that the NHI plan is fulfilling the intent of Congress, that it is achieving its stated objectives. As such, the functions of public accountability (A' in figure 1) include demonstration of progress toward the goals of equity, quality assurance, rational resource allocation, cost containment, effectiveness and efficiency, financial protection, and improvements in health. As with management functions, each of these goals raises questions (B' in figure 1) to be addressed by information (C' in figure 1).

A basic difference between data sources for management and those for public accountability is apparent. All of the management data derive from NHI administrative operations. Development of public accountability data, however, often will need to rely on a variety of sources, only one of which is program data. These sources and their structural requirements will be discussed after first considering the types of questions arising from public accountability.

Questions to be posed by the goals of equity, quality assurance, protection against catastrophic personal expenses, and improved health status include "How are NHI resources and benefits distributed among socioeconomic groups? How does access to and use of health services vary among enrollee groups, and what factors determine that variation? Are improvements in health status—mortality, morbidity, and functional status—associated with use of NHI-covered services? Does NHI significantly affect the financial burden of health care on individuals and/or families?—on the poor, the elderly, and minority groups?"

Assessment of cost containment and resource allocation strategies as well as efforts to improve the effectiveness and efficiency of NHI raise many of the same questions addressed by financial management of the plan. Additional queries arising from specific policy debates could include "What are the fiscal implications of redistributing funds within the operating budget to further specific policy objectives (e.g., shifting funds from institutional to ambulatory care settings)? What are the fiscal consequences of cost control mechanisms? How do total and per capita expenditures vary among delivery settings, for example,

ple, various HMO models? What effects do different reimbursement procedures have on total costs and volume of care? How do NHI reimbursement practices and/or delivery reform measures influence the geographic and specialty distribution of physicians? What impact, if any, does NHI have on the productivity of providers? Does NHI influence shifts in use that are reflected in changes in the number and types of available provider services (e.g., area bed complement)? What, if any, resource measures are useful in identifying medically underserved areas? What new types of personnel and organizations are emerging and what impact do they have on the use and cost of care?"

Having stated the types of questions that must be answered to ensure public accountability, possible sources of information needed to address those questions must be identified and their structural characteristics defined. As illustrated in figure 1, it is essential first to ask "Can data generated by program operations meet these information needs?" If the answer is "no," "only partially," or "yes, but not feasibly," efforts should be made to seek other sources (C'' in figure 1) for additional data (D' in figure 1). Currently available surveys, administrative data systems, and censuses, some of which will be discussed later, should be carefully examined to determine their adaptability to these additional NHI information needs. Only if neither NHI administrative data nor existing data systems can yield the needed information should investments be made in developing new sources.

Analysis of public accountability issues (E' in figure 1) can follow any of three paths. Some analyses could be based only on program data (i in figure 1) through direct products of management functions (e.g., financial statements) or through byproducts of those data (e.g., statistical files constructed from program data). A second route (ii in figure 1) is analysis through linkage of additional data sources to data available from program operations. The third route (iii in figure 1) is analysis of additional data, generated to address a specific issue, separate from program data. The following discussion of data sources and structural requirements illustrates these processes.

Assessment of many fiscal policies (e.g., redistri-

bution of funds within NHI to further specific policy objectives) represents the first analytical pathway; that is, the assessment is a function that could conceivably rely totally on program data to fulfill its information needs. These data include cost reports, utilization and expenditure data, and operating budgets accumulated for daily plan management. To ensure their usefulness, these sources must contain data elements that can be grouped into the specific geographic, service, and enrollee categories of analytical interest. For example, if NHI employs areawide budgeting, analysis of fiscal affairs will require assembly and retrieval of relevant data at that area level. Similarly, funds flow analyses that address issues of budget allocation must identify specific revenue bases and the flow of payments through categories of service (hospitals, physicians, etc.) provided to various beneficiary groups.

The diverse questions posed by goals of equity, quality assurance, protection against catastrophic personal expenses, sound resource allocation, and improved health status will require data derived from both program and external (nonadministrative) sources. The second and third analytical pathways thus will be followed.

Measures of service use, expenditures, and health status must be related to the total population and to relevant groups of that population to address these issues. When the groups of interest are NHI beneficiaries, the enrollment file in the management information system should serve as the population base for such analyses. For this reason, the first principle on which NHI information systems should be built calls for the capability to count the number of persons enrolled, the number served, and the services used. The implications of this principle should be considered.

Adoption of such a population-based system will represent a major change from current practice in the insurance industry. Most existing health insurance plans are designed solely to finance all or part of the cost of specified services for a given group of people. Enrollment data are not obtained on a person basis. Rather, especially for large groups, the insurance carrier maintains data that indicate merely the number of group members who have elected coverage for themselves only (single policies) and those who have elected coverage for themselves and all eligible dependents (family policies). The number of single members is added to the total of an assumed average number of people per family policy to estimate the plan's total enrollment. Even for small groups, many carriers, while identifying the enrollee and spouse, if any, merely record the existence or nonexistence of dependent children rather than the actual number

involved. Although these enrollment data have proved adequate for estimating gross utilization and expenditure rates, they cannot be refined for age or socioeconomic specific estimates.

In contrast, Medicare, prepaid group practices, and some other private plans do maintain enrollment files with the sex and date of birth of each enrollee recorded, and each individual is assigned a unique identification number. With this feature, for example under Medicare, the number of hospital admissions for a group of the enrollee population (e.g., white females older than age 70) can be related directly to the number of such persons enrolled and hence can produce a reliable estimate of the rate of hospitalization for that group. Among other uses, these rates are essential for analyzing the cost and resource implications of differences in service use among population groups, changes in those patterns over time, and associated changes in population size and characteristics.

The first principle also calls for data linkage, that is, the capability to integrate data flowing into the program from different sources. In existing information systems, hospital discharge data are usually maintained in an inpatient services file, physician visits in an ambulatory services file, and so forth. Few mechanisms exist for integrating and analyzing related information from these separate files because management functions rarely call for such integration. As a result, although one can determine how much money was expended by a program, how many services were provided, and, perhaps, how many people were served, one usually cannot determine how much was spent on what for whom.

Medicare provides several examples of data linkage capabilities. Hospitalization data are generated from a hospital claims file. Information on characteristics of the stay (e.g., admission, discharge and surgical dates, and hospital charges) is available in that file. However, information on physician services provided during that stay is not included. The entire experience of hospitalization—all services consumed by patients and their associated expense—thus cannot be described by data from this source alone.

Medicare, however, has individual beneficiary identification numbers to serve as a linkage mechanism between management data sources. Data on physician services provided during a hospital stay can be linked with the hospital data to provide more complete information on that hospitalization. The Medicare linkage mechanism has been used to create a history file of a sample of beneficiaries that combines in one record data about sampled individuals' annual use of hospitals, skilled nursing facilities, home health

agencies, and physicians. This file permits an overview of rates of use of covered services and has the potential for analysis of lifetime Medicare use patterns. Thus it can contribute to assessment of program impact and adequacy.

Hospital discharge data for a 20-percent sample of beneficiaries form another multiple-source Medicare file. For each discharge, the identification number is used to link that beneficiary's characteristics on the enrollment file, and the hospital's unique provider number is the linkage mechanism for integrating facility characteristics from the provider inventory file. The result is a descriptive composite record of the patient, the hospital, and the hospital stay.

As illustrated by these files, the questions addressed by linked data need not use all records in a system. The beneficiary history file contains records for only a 5-percent sample of Medicare enrollees. Similarly, a 20-percent sample has proved adequate for most research and evaluation related to hospital use. The object of linkage, therefore, is not to create a master merged file of all records, but to retain the capacity to link relevant records when an analysis of types of beneficiaries, providers, or episodes of illness requires composite information.

Since equity is a major NHI goal, analysts will need population-based, linkable data to determine the degree to which NHI has reduced known socioeconomic differentials in access to services, quality of care, financial burdens of health care, and subsequent health status. The use of patient identifiers as a linkage mechanism could arouse concern about confidentiality and privacy. Linkage is performed, however, not to focus on specific individuals, but to integrate related information in constructing aggregate population data. For example, studies on equitable distribution of services would link use of services to specific types of patients—white persons versus those of other races, poor versus nonpoor, and so forth. Collection of data on color and income would be only used to identify population groups, not to examine the individual records that are combined to form those groups. Effective internal controls must be developed to ensure that use of the linkage mechanism is consistent with examining aggregate measures.

As illustrated by the Medicare examples, many questions related to equity and other goals can be addressed with byproducts of program data alone. Evaluation of the impact of NHI, however, will also require comparative information that will not be present in program files. One situation involves establishing a baseline period, that is, the health care experience of the population prior to implementation of NHI, which is needed to study trends before and after NHI. A second situation involves study of the experience of nonenrollees in contrast to that of enrollees, if NHI does not provide universal coverage. In both situations, use of noncovered services by enrollees will also require study.

Several baseline information sources exist: (a) program data from Medicare, Medicaid, Professional Standards Review Organizations (PSRO's), and private insurers; (b) uniform reporting systems such as the components of the Cooperative Health Statistics System (CHSS); (c) series of cross-sectional surveys including the U.S. Bureau of the Census' Current Population Survey (CPS), and the Health Interview Survey (HIS), the National Ambulatory Medical Care Survey (NAMCS), the Health and Nutrition Examination Survey (HANES), and the National Nursing Home Survey (NNHS) of the National Center for Health Statistics (NCHS); and (d) household panel surveys such as the former Current Medicare Survey (CMS), the 1977 National Medical Care Expenditure Survey (NMCES), and the forthcoming National Medical Care Utilization and Expenditure Survey (NMCUES).

Although the information system under consideration in this report will be primarily concerned with the performance of NHI, the continuing impact of the plan on the entire health care system will also be of political and public policy interest. In anticipation of this interest, the congressional mandate should state the need for measures of the use of services and expenditure of resources by the entire population. Such measures will be needed to (a) assess the impact of NHI on health and health care services, (b) detect gaps or inappropriate coverage within NHI, and (c) provide a basis for assessing program changes such as addition of previously excluded benefits or persons. Since this information will be needed on nonenrollees and noncovered services, the mandated information system must include the capability to estimate periodically, for population groups not covered by NHI as well as those covered, the size and demographic characteristics of the groups, and their use of both covered and noncovered services. This capability should be developed from periodic population sample surveys, not routine, universal data collection processes.

Several examples of such surveys exist. The CMS, which was conducted annually from 1967 to 1977, was designed to serve similar purposes within Medicare. Each year, a sample of beneficiaries was selected and interviewed monthly to identify use of covered and noncovered services, and the extent of their out-of-pocket payments. The CMS was a source for studying overall health service use and financial burdens of the

disabled and elderly, and, more specifically, the adequacy of Medicare coverage in meeting the health care needs of its beneficiaries.

Multiple interviews of a sample of the civilian non-institutionalized population during 1977 were conducted by NMCES, sponsored jointly by NCHS and the National Center for Health Services Research (NCHSR). In this survey, information was gathered about functional status, use of health services, conditions for which services were received, extent and type of insurance coverage, and amount of total and out-of-pocket payments. The NMCES data currently represent the most comprehensive view of health care for the entire population. Plans are now underway to continue this type of panel survey in the form of the NMCUES to be sponsored jointly by NCHS and the Health Care Financing Administration.

The NHI administrative needs for health status data will most likely be limited to (a) reasons for visits, diagnoses, and surgical and selected diagnostic procedures to determine why services were provided, (b) notification of death to permit updating of enrollment records, and (c) notification of specific conditions or services, if required by NHI provisions (e.g., reporting requirements for special health initiatives, utilization review, or monitoring use of special procedures). Aggregate utilization data from program operations can be used for limited measurement of health status. Since program sources for addressing questions regarding NHI impact on health status are limited, however, additional data will be needed.

Other systems of individual records from which aggregate morbidity and mortality measures could be derived include medical records, school records, birth and death certificates, and disease registries. The CPS data and notifiable disease reports maintained by the Center for Disease Control are regular sources of aggregate data. Finally, sample surveys or special studies such as those discussed earlier, can provide needed data not routinely collected through NHI administrative records or many of the other existing systems. Examples include epidemiologic studies conducted under the sponsorship of NIH, NIOSH, and other agencies, and the HIS and the HANES of NCHS.

Certainly, program data from cost reports, operating budgets, utilization data, and provider inventories will be useful in addressing many questions regarding cost containment and resource allocation strategies. In addition, professional organizations such as the American Medical Association, the American Hospital Association, and the American Nurses Association maintain inventories and conduct surveys that can provide valuable information for analysis of NHI issues.

However, some issues, such as provider productivity under NHI, will require detailed data on hours of work, services provided to patients, support services available to the provider, and so forth that are not generally available in either program data or existing secondary sources. The NAMCS is an example of a survey that can provide additional information. Other questions dealing with issues such as costs of medical practice and impact of reimbursement practices on the organization of delivery settings also will have to rely on special surveys to fulfill their information needs.

The diverse questions posed by public accountability indicate the need for a complex array of information sources in NHI. As outlined in this discussion, some of these needs can be served by program data, but others will rely on existing sources as well as new data collection efforts. The complexity and cost of this system will require careful, thorough coordination of the organizational units involved and the methodologies employed. Use of the same sampling frames for NHI-related surveys is one means of coordination—population-based studies could use the NHI enrollment file to sample plan beneficiaries and the Census Bureau's records to sample the nonenrollee population when it, too, is under study; provider-based studies could use NHI provider participant files augmented by inventories of professional associations when program participation is less than universal. Use of uniform minimum data sets, classification schemes, and glossaries among the various sources would ensure data comparability and thus allow synthesis of varied data needed for analysis of a specific issue. A clear designation of authority and responsiblity for all data activities would help ensure a smooth, sensible flow of data from local levels where it originates to regional and national levels where management and policy issues are analyzed. In turn, the useful products of that data flow could more easily be returned to the local level where they could be directly applied to specific health care needs.

Section V. Summary

This report outlined the essential role of an information system in NHI and stressed the importance of anticipating NHI information needs and planning for them well in advance of program implementation. Management information needs have been recognized and discussed briefly. The thrust of the report, however, has been on the information needs associated with questions of public accountability, that is, the issues of policy analysis and evaluation.

Inclusion of specific language in NHI legislation is recommended to ensure establishment and support of an information system that will serve the varied needs of management, policy analysis, and evaluation. The major features of this recommended language are

1. A set of principles that should guide the structure and functioning of the NHI information system,
2. A provision that would require designation of responsibility for management information functions, and for evaluation and policy analysis studies,
3. Specific funding provisions to ensure continued support of the information system,
4. Establishment of a commission to advise and oversee NHI information needs, system priorities, policies, and activities, and
5. A required annual report to Congress on the status and functioning of the NHI program.

This report has not explored the details of the information system's organizational structure, costs, or data content. Rather, it presents a conceptual framework on which to base decisions about those details.

For example, in examining the questions posed by financial management, those responsible for system design should identify required data items, the frequency with which those items must be collected, necessary arrangements to ensure timely data retrieval, and appropriate analytical techniques.

Although an extensive array of questions has been posed in discussion of the conceptual framework, not all of these questions can, or should, be addressed immediately. Issues such as the effect of NHI on the distribution of resources and use of services can only be addressed in the future. However, anticipating the information requirements of these questions and building a data and analytical capacity to cope with the demands for specific analyses are critically important tasks.

In planning for the information needs of NHI, the value of the knowledge gained must justify the costs associated with data collection and analysis. Careful prior consideration of the purposes served by the data will help to avoid the costly trap of gathering data for their own sake. Existing information systems and sampling methods should be used whenever possible. Experience with the information-related aspects of management and public accountability should be constantly examined to identify the most effective approaches to data collection and analysis. In addition, the various organizational units must be carefully coordinated to ensure efficient transfer of information and to avoid costly duplicative activity. These and other efforts will ensure maximal use of resources in producing useful information for NHI management, policy analysis, and evaluation.

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